

CLAIMS

1. A buffered optical fiber having a second coating layer on an outer peripheral surface of an optical fiber produced by providing a first coating layer on an outer peripheral surface of a glass fiber,

wherein a second resin composition constituting the second coating layer comprises a base polymer, and 100 to 250 weight parts of metal hydroxide and 10 to 100 weight parts of a nitrogen-based flame retardant material per 100 weight parts of the base polymer,

and wherein the second resin composition does not contain halogenated materials.

2. The buffered optical fiber according to claim 1, wherein the base polymer is constituted by a noncrystalline resin.

3. The buffered optical fiber according to claim 1 or 2, wherein the second resin composition comprises, as the base polymer, one of components selected from the group consisting of a polystyrene-based polymer, a polystyrene-based elastomer, a mixture of polystyrene-based polymer and polyphenylene ether polymer, and a mixture of polystyrene-based elastomer and polyphenylene ether polymer.

4. The buffered optical fiber according to claim 3, wherein a part of the polystyrene-based polymer or the polystyrene-based elastomer is subjected to acid modification.

5 5. The buffered optical fiber according to one of claims 1 to 4, wherein the second coating layer is formed of two or more coating layers.

6. The buffered optical fiber according to one of claims 1 to 10 5, wherein the buffered optical fiber is constituted so that an amount of transmission loss variation (dB/km) is equal to or less than 0.2 dB/km, said

AMOUNT OF TRANSMISSION LOSS VARIATION comprising: a difference in quantity between a maximum loss variation and a 15 minimum loss variation in a transmission loss amount (in dB/km at a wavelength of 1.55 μm and including a transmission loss amount generated just after the test is started) generated during a heat cycle exposure test performed by repeating a heat cycle consisting of 0.5 hours, in which temperature is held at $(-40)^{\circ}\text{C}$, 20 and 0.5 hours, in which temperature is held at 85°C .

7. The buffered optical fiber according to one of claims 1 to 6, wherein the linear expansion coefficient of the second resin composition is equal to or less than 4.0×10^{-4} (1/K).

8. The buffered optical fiber according to one of claims 1 to 7, wherein residual thermal distortion at cabling is equal to or less than 150 μm , said

RESIDUAL THERMAL DISTORTION AT CABLING comprising: a
5 distance between an end surface of said glass fiber and an end surface of said second coating layer in said buffered optical fiber which is heat-treated at 120 °C for 168 hours.

9. The buffered optical fiber according to claim 5, wherein
10 said buffered optical fiber has said first coating layer of an ultraviolet curable resin layer and said buffered optical fiber is configured so that when a cut is made in the direction from said second coating layer to said glass fiber so as not to allow an apex of the cut to reach said glass fiber and the ultraviolet
15 curable resin layer and said second coating layer are separated from said glass fiber by drawing them out of the glass fiber, a "ratio of a length of said ultraviolet curable resin layer in a separated and removed coat piece to a length of said separated second coating layer" is 15 % to 85 %.

20
10. The buffered optical fiber according to claim 9, wherein an inner layer and an outer layer are serially provided as said second coating layer on an outer peripheral surface of said optical fiber in a direction in which said layers are away from
25 said optical fiber, said inner layer being derived by adding

100 to 250 weight parts of metal hydroxide and less than 100 weight parts of a nitrogen-based flame retardant material per 100 weight parts of polystyrene-based thermoplastic polymer, polyolefin-based thermoplastic polymer, or polyphenylene ether
5 polymer, or a mixed polymer of these materials.

11. The buffered optical fiber according to claim 9, wherein an inner layer and an outer layer are serially provided as said second coating layer on an outer peripheral surface of said
10 optical fiber in a direction in which said layers are away from the optical fiber, wherein said outer layer being derived by adding 100 to 250 weight parts of metal hydroxide and less than 100 weight parts of a nitrogen-based flame retardant material per 100 weight parts of polystyrene-based thermoplastic polymer,
15 polyolefin-based thermoplastic polymer, or polyphenylene ether polymer, or a mixed polymer of these materials.

12. The buffered optical fiber according to claim 9, which is constituted so that a drawing-out force on drawing out said
20 ultraviolet curable resin layer and said second coating layer from said glass fiber is equal to or less than 2.5 kgf.

13. A buffered optical fiber terminated with a connector obtained by connecting a buffered optical fiber according to
25 one of claims 1 to 12, which is configured by exposing a part

having a predetermined length from an end of said glass fiber
thereby to have a glass fiber exposure portion and a coating
end surface and a connector incorporating a ferrule that has
a hollow space enabled to accommodate the glass fiber exposure
5 portion, wherein the coating end surface abuts against an
abutting end surface of said ferrule so as to accommodate said
glass fiber exposure portion in a state, in which no distortion
force is applied thereto, in the hollow space.